

COTTON FIELD CHECK

Commentary on Field Conditions - April 21, 2003

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The Weather. The roller coaster spring weather of 2003 has made planting decisions difficult, creating multiple periods during which five-day heat unit forecasts have changed by the day from "unacceptable" to "marginal" or even "acceptable" and then back again. Repeated rains or forecasts of rain, plus a lot of clouds have also contributed to fluctuating, lower-than desired soil temperatures. Low soil temperatures combined with wet soil conditions can reduce germination rates, slow emergence and early seedling growth, and provide conditions conducive to injury from one or more seedling diseases. Combined, all these conditions have made for some difficult decisions regarding the question "to plant or not to plant?"

Heat unit totals from mid-March through late-April have been lower than average, but not as low as the same periods in difficult years like 1995 and 1998. Heat units accumulated during the 31 days from March 20th through April 19th using the 60F baseline totaled 67 DD₆₀'s for Los Banos (Merced County) versus 96 for Shafter (Kern County). For comparison, heat unit totals for the same period (March 20 to April 19) at Shafter during some specific years were 71 (1995), 45 (1998), 134 (2000), and 110 DD₆₀'s (average during 1974-2002). This information shows that we have experienced even lower heat units in some recent difficult planting years, but that only tells part of the story. Other factors many of us consider in making planting decisions include:

- Soil moisture content at planting depth (too high and seed may rot or soil may form a compacted layer that can impact emergence; too low water content and seed may germinate and then dry up and die)
- Soil temperature (general idea is to wait until soil temperatures measured at 6 inch depth at 8AM reaches 58F or above)
- Probability of significant rainfall that might: (a) cool down the soil too much; (b) promote seedling diseases; or (c) interfere with removal of a "cap" put in place to conserve moisture after planting

For the past couple of weeks, most of the low temperatures have not dropped out of the "cool" weather category into what many would consider "cold". Air temperatures have generally not been cold enough to cause direct chilling injury to the seed or seedlings, but rather have been cool enough during cloudy and cooling spells to reduce soil temperatures to unfavorable levels and slow plant emergence, or to slow growth and development in plants already emerged.

Rainfall amounts across the SJV were highly variable in the March and April storms, with some areas being hit multiple times and others missed or only getting light rain. The amounts of rainfall often had a big impact on how much the soil was cooled down and how soon planters could get back into fields. What has made this particular year difficult has been the repeated double threat of low heat units combined with cloudy weather and rainfall that cooled down the soil. Concerns about planting and then getting hit with a cold rain have led most of us to hold off planting several times, waiting for the next "window" that might be better.

Status of Planted Fields / Prognosis. Here at the beginning of the fourth week of April, a fair number of fields have been planted from Kern County all the way north into Merced County. However, many fields remain unplanted, with growers waiting for better combinations of soil temperatures, workable soil moisture, and improved five-day heat unit forecasts. Since we are getting so late in April, over the last week or more, many growers have planted some fields under what have looked like marginally acceptable conditions (soil moisture good but not too wet, soil temperatures close to 58F or more at 6 inches depth at 8 AM, at least marginally ok 5-day heat unit forecast). Many of those same growers are spreading out their risk, however, by holding back on planting other fields, waiting at least a while for better weather conditions.

Some earlier-planted fields look fairly good, with only limited evidence of seedling disease or stand problems, but many look pretty rough with a high probability of a call for replanting. After looking at some problem fields, our observations have been that those fields that actually were hit by multiple rains of 1/3 inch or more in addition to the cloudy and cool weather have more disease and plant population problems at this time. Even if plants successfully emerged and avoided seedling disease, most plants that are up are not growing very vigorously yet due to limited warm weather.

When planting during less than optimal conditions, it is more likely that you will experience higher plant mortality and more problems with both emergence and seedling survival. Past experience with prolonged cool spells, particularly if repeated rains and clouds also keep the ground cool and wet, is that there will be larger-than-usual losses of plants to seedling disease. This cool, cloudy weather during seedling growth has also typically been associated with higher thrips population and worse-than-usual foliar and terminal damage during development of the first 3 to 5 or more leaves. Under fairly normal spring weather conditions, leaf and terminal damage from thrips is generally mild to moderate, and UCCE recommendations under even moderate thrips pressure are to avoid chemical control measures due to potential for early insecticide applications to disrupt beneficials and promote earlier problems with other pests such as spider mites or lygus. Control measures for thrips should only be made under severe injury situations such as when root systems are weak and plant terminals are being heavily damaged. .

As the weather hopefully improves over the next week or so, it will be useful to:

- check out plants for signs of new, green leaf growth – with warmer weather, plants should begin to put out new main stem leaves, and yellowed cotyledons should give way to new green leaves if plants are healthy
- dig up a few plants to evaluate root systems for seedling disease damage – even if damaged by seedling disease, if they are to survive and have acceptable vigor, you should start to see secondary roots forming in plantings 2-3 weeks old or more as the weather warms – do this again in a couple of weeks when the weather really warms up, as plants with weak root systems will need a first irrigation earlier than those with better, deeper roots
- on a field by field basis, evaluate whether or not plant populations are acceptable – past research has shown that it may be better to accept a thinner stand of cotton you already have (even as low as 20,000 plants per acre if distributed fairly well in the field) than replant once you get very far into May

If plants don't seem to be responding to better weather and plant stands are unacceptable, there is still potential for moderate yields with May plantings with the right choices and management (variety choice, control of early fruit loss, growth regulator, water and nitrogen management). If considering a late Pima planting, it will be desirable to consider earlier-maturing varieties for at least part of your plantings, even if you have had best luck with longer-season varieties in prior years. This will allow you to have at least part of your acreage ready for an earlier harvest in case the fall season isn't as favorable as the past couple of years.

The UCCE Advisors and Specialists will try to provide updates and suggestions through Mitefax and production meetings as the season progresses.